USE OF EXPANDED BED CHROMATOGRAPHY IN INDUSTRIAL SCALE ENZYMES PRODUCTION

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Expanded bed adsorption (EBA) is a chromatographic technique with the potential of combining several unit operations in the recovery and purification of enzymes. It uses a non-packed bed of chromatographic resin whereas conventional chromatographic columns use packed beds. Because the bed is expanded, it is not required to clarify the feed and it is therefore possible to load whole broth onto the column, capture the target product and concentrate it with elution. This mode of operation eliminates several unit operations like solid/liquid separation, clarification and concentration, which lead to an increase of the overall process yield, lower costs and free-up of capacity.

While EBA was developed in the late 90's, several technological issues associated with resin design and flow distribution systems hampered it's successful use with systems in relevant production scenarios.

Here we show the applicability of EBA technology to purify enzymes. Process modelling and simulations shown benefits as compared with current processing using conventional chromatography. We demonstrate that novel EBA technology options are suitable to generate low cost manufacturing processes for enzymes production.